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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 664,094	09/19/2000	Masayuki Mizuno	Q60884	5281

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EXAMINER

MONDT, JOHANNES P

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 12/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/664,094

Applicant(s)

MIZUNO, MASAYUKI

Examiner

Johannes P Mondt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 11/19/2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/22/2002 has been entered as Paper 13.

Response to Amendment

Amendment B filed 10/22/2002 has been entered as Paper No. 13 and forms the basis of this office action. Comments on Remarks by Applicants in said Amendment B are included below under "Response to Arguments".

Response to Arguments

2. Applicant's arguments filed 10/22/2002 have been fully considered but they are not persuasive. First, Toyoda et al specifically mention: "a transmission line such as a microstrip line is formed...and controlled in specific impedance by through holes" (Abstract, Purpose, final sentence). Second, the further limitation as provided by the amendment of the claim language has a problem in that the inner wall of the through hole in the signal line or ground plate, by definition of through hole, is (at least in part) part of the signal line or ground plate, respectively, and hence certainly is electrically connected to said signal line or ground plate, respectively.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. ***Claims 1, 2 and 5*** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In particular,

(a) claim 1 recites a through hole in a signal line and "an inner wall of said through hole is not electrically connected to said signal line and said ground plate". This specification is impossible to implement, because by definition the inner wall of the through hole is made of the same material as the signal line, while the signal line is inherently conductive and connected to itself. Furthermore, the cited further limitation in the claim is neither described nor explained, or otherwise referred to within the specification;

(b) claim 2 recites a through hole in a ground plate and "an inner wall of said through hole is not electrically connected to said signal line and said ground plate". This specification is impossible to implement, because by definition the inner wall of the through hole is made of the same material as the ground plate, while the signal line is inherently conductive and connected to itself. Furthermore, the cited further limitation in

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the claim is neither described nor explained, or otherwise referred to within the specification;

(c) claim 5 recites a through hole in a signal line and a ground plate and "an inner wall of said through hole is not electrically connected to said signal line and said ground plate". This specification is impossible to implement, because by definition the inner wall of the through hole in said signal line and the inner wall of the through hole in said ground plate are made of the same material as the signal line and the ground plate, respectively, while the signal line and the ground plate are inherently conductive and connected to themselves. Furthermore, the cited further limitation in the claim is neither described nor explained, or otherwise referred to within the specification.

5. **Claims 3-4 and 6-9** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, by virtue of their dependence on independent claims 1, 2, and 5, said independent claims having been rejected under U.S.C. 112, first paragraph.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by Toyoda et al (JP405166965A).

With reference to "Abstract: Purpose and Constitution": Toyoda et al teach a package structure with semiconductor chip 42, hence a semiconductor integrated circuit comprising a signal transmission line (cf. "Constitution", second sentence) of a micro-strip structure (cf. "Abstract, first sentence) composed of an insulating board or ground plate 44 and a signal line 46 controlled in specific impedance by holes formed in said signal line (cf. through-holes in signal line as evidenced in Figs. 1 and 3, numeral 48 and as specifically recited in the abstract, final line of "Purpose"). In conclusion, Toyoda et al anticipate claim 1.

3. **Claim 2** is rejected under 35 U.S.C. 102(b) as being anticipated by Toyoda et al (JP405166965A). With reference to "Abstract: Purpose and Constitution": Toyoda et al teach a package structure with semiconductor chip 42, hence a semiconductor integrated circuit comprising a signal transmission line patterns (cf. "Abstract: Constitution", second sentence) of a micro-strip structure (cf. "Abstract, first sentence) composed of an insulating board or ground plate 44 and a signal line controlled in specific impedance by holes formed in said signal line (cf. through-holes 56 and 58 in ground plate as evidenced in Figs. 1 and 3 and as specifically recited in the abstract, final line of "Purpose"). In conclusion, Toyoda et al anticipate claim 2.

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4. **Claims 3-4** are rejected under 35 U.S.C. 102(b) as being anticipated by Toyoda et al (JP405166965A).

With regard to claim 3: Toyoda et al teach a package structure (cf. "Abstract: Purpose", first sentence) comprising a semiconductor microchip 42 (cf. "Abstract: Constitution", first sentence) comprising a signal transmission line 46 (cf. Abstract: Constitution", second sentence) and a ground plate or insulating board 44 (cf. "Abstract: Constitution", first sentence) according to claim 2, wherein the size of the aforementioned at least one hole or through-holes 56 and 58 (cf. "Abstract: Purpose", final sentence, see also Figs. 1 and 3) formed in said ground plate 44 is determined such that the AC coupling between the signal line 46 and another signal line or rear-side signal line 50 (cf. "Abstract: Constitution", second sentence) disposed close to said signal line 46 but on the opposite side of said ground plate 44 is decreased and the characteristic impedance of said signal transmission line 46 is increased (cf. "Abstract: Purpose", final sentence). That in fact the AC coupling is decreased follows from the well-known relationship in physics between the AC coupling and the impedance through capacitance, and as such is an inherent aspect, given the stated purpose and constitution by Toyoda et al. Therefore, Toyoda et al anticipate claim 3.

With regard to claim 4: because it is the very purpose of Toyoda et al to control said impedance by providing said through-holes the further limitation of claim 4 is an inherent aspect of the constitution given the trivial relationships between conductor surface area, capacitance, frequency, impedance and AC coupling.

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5. **Claims 5-7 are rejected** under 35 U.S.C. 102(b) as being anticipated by Toyoda et al (JP405166965A). Toyoda et al teach a semiconductor integrated circuit (cf. "Abstract: Purpose", first sentence, and "Abstract: Constitution", first sentence, in particular reference to package and semiconductor chip 42) comprising a signal transmission line 46 of a micro-strip structure (cf. "Abstract: Constitution", second sentence) composed of a signal line or surface-side signal line 46 (cf. "Abstract: Purpose", and "Abstract: Constitution", first sentence) and ground plate or insulating board 44 (cf. Abstract: Constitution", second sentence) wherein at least one hole (through-hole 56 and 58, cf. "Abstract: Constitution", first sentence) is formed in both of said surface-side line 46 and rear-side signal line 50 (cf. "Abstract: Constitution", second sentence) throughout (cf. "Abstract: Purpose") ground plate 44. See also Figs. 1 and 3.

With regard to claim 6: Toyoda et al teach a package structure (cf. "Abstract: Purpose", first sentence) comprising a semiconductor microchip 42 (cf. "Abstract: Constitution", first sentence) comprising a signal transmission line 46 (cf. Abstract: Constitution", second sentence) and a ground plate or insulating board 44 (cf. "Abstract: Constitution", first sentence) according to claim 5, wherein the size of the aforementioned at least one hole or through-holes 56 and 58 (cf. "Abstract: Purpose", final sentence, see also Figs. 1 and 3) formed in said ground plate 44 is determined such that the AC coupling between the signal line 46 and another signal line or rear-side signal line 50 (cf. "Abstract: Constitution", second sentence) disposed close to said signal line 46 but on the opposite side of said ground plate 44 is decreased and the characteristic impedance of said signal transmission line 46 is increased (cf. "Abstract:

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Purpose", final sentence). That in fact the AC coupling is decreased follows from the well-known relationship in physics between the AC coupling and the impedance through capacitance, and as such is an inherent aspect, given the stated purpose and constitution by Toyoda et al. Therefore, Toyoda et al anticipate claim 6.

With regard to claim 7: because it is the very purpose of Toyoda et al to control said impedance by providing said through-holes the further limitation of claim 7 is an inherent aspect of the constitution given the trivial relationships between conductor surface area, capacitance, frequency, impedance and AC coupling.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. ***Claims 8 – 9 are rejected*** under 35 U.S.C. 103(a) as being unpatentable over Toyoda et al (JP405166965A).

With regard to claim 8: as detailed above, Toyoda et al anticipate both claims 1 and 2, on which claims 9 and 8 depend, respectively. Toyoda et al do not specifically teach to implement the control of the specific impedance of the transmission lines by varying the *size* or *shape* of the aforementioned through-holes. However, Toyoda et al do point out that the through-holes are introduced so that the specific impedance of the transmission lines can be "controlled". Because there is more than one transmission line

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in Toyoda et al (surface-side and rear-side transmission lines 46 and 50) it is an obvious step to modify the impedance of one transmission line more than the other in accordance with design requirements, while it is equally obvious that a bigger hole means a greater modification of said impedance. Applicants are furthermore reminded of the circumstance that a change in size is generally recognized as being within the level of ordinary skills in the art (In re Rose, 105 USPQ 237 (CCPA 1955)).

With regard to claim 9: because a slit hole can be constituted by a plurality of connected circular holes while substantially circular holes have been disclosed by Toyoda et al, the question with regard to claim 9 is whether the number of holes has patentable weight. Considering the substantial equivalence between the method of controlling impedance by modifying the size of a single hole and the method of controlling impedance by modifying the number of holes, the remarks above with reference to In re Rose, 105 USPQ 237 (CCPA 1955) also apply to claim 9.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Miyagi (JP411251490A);

Shafai (4,947,178);

Ittipiboon et al (INSPEC Accession Number: 3956834).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johannes P Mondt whose telephone number is 703-306-0531. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 703-308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JPM

November 27, 2002


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